

Appl. No. 10/743,985
Amdt. dated 02/28/2007
Response to Office Action of 11/28/2006

Attorney Docket No.: N1085-00168
[TSMC 2003-0219]

REMARKS/ARGUMENTS

Claims 11-35 were previously pending in the subject application with claims 20-35 having been withdrawn from consideration. Claims 11-19 were rejected on the subject Office action. Claims 11 and 13-18 are amended in this paper; claims 20-35 are being cancelled; and, claim 36 is newly added.

Applicants respectfully request re-examination, reconsideration and allowance of each of pending claims 11- 19 and 36.

Claims 11-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over King, et al., "Sub-5 um Multiple-Thickness Gate Oxide Technology Using Oxygen Implantation," Int. Electron Device Meeting (IEDM), San Francisco, Paper 21.1.1 (1998), hereinafter "King." Applicants respectfully submit that these claim rejections are overcome for reasons set forth below.

Briefly and in summary, the claimed invention is distinguished from King because of the following: King teaches implanting oxygen ions then forming a gate oxide from the implanted oxygen ions. King's oxide is a thermal oxide grown from the implanted oxygen and it encroaches the original substrate surface and includes a greater thickness (see FIG. 1(a), bottom) in the doped oxide regions than in the undoped regions. In contrast, the **claimed invention** teaches implanting oxygen atoms into a substrate to form a discrete oxide section within the substrate, then forming a gate oxide layer over the discrete oxide implant regions formed in the substrate (i.e. not encroaching the discrete oxide sections in the substrate). This is described in the originally-filed specification, in particular in paragraph [0044] which recites "the gate oxide layer (132) covers the oxygen or fluorine implants (128), at the top surface (112).", referring to FIG. 2E. FIG. 2E also illustrates the feature that the gate oxide layer (132) has the same thickness over the oxygen or fluorine implants (128), as it does over the non oxygen or fluorine implanted areas.

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In particular, claim 11, the only independent claim of the rejected claim set, has been amended. Amended independent claim 11 recites the features of:

5 oxygen ions providing discrete implant regions in a substrate of an SOI device, the discrete implant regions extending to a surface of the substrate;

a gate oxide layer covering but not encroaching the discrete implant regions.

10 Claim 11, and therefore also claims 12-19 which depend from claim 11, are distinguished from King which provides a single gate oxide formed from the implanted oxygen ions, and not a gate oxide layer formed over the implanted oxygen ions.

15 Dependent claim 13 has been amended to point out another distinguishing feature of the invention: wherein the gate oxide layer has the same thickness over the discrete implant regions and over regions other than the discrete implant regions. This feature is not achievable in King, as King's implanted regions necessarily have a thicker resultant gate oxide.

Newly added independent claim 36 has been added and also points out the distinguishing "same thickness" feature recited in claim 13. Applicants respectfully submit that claim 36 is in allowable form.

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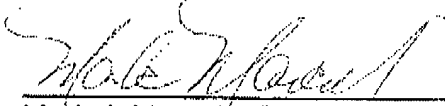
CONCLUSION

Based on the foregoing, each of pending claims 11-19 and 36 is in allowable form and the application in condition for allowance, which action is respectfully and expeditiously requested.

The Assistant Commissioner for Patents is hereby authorized to charge any fees necessary to give effect to this filing and to credit any excess payment that may be associated with this communication, to Deposit Account 04-1679.

Respectfully submitted,

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